6. (a) Protein kinases remain at almost constant concentrations but still regulate progression of cell cycle through different phases. How? Explain. (9)

(b) Write short notes on **(any two)** : (2×4.5=9)

(i) Plasmodesmata

(ii) Factors determining membrane fluidity

(iii) Functions of cytoskeletal elements

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1036 **D**

Unique Paper Code : 3182011102

Name of the Paper : Cell Biology

Name of the Course : **Bachelor of Science (Honours Course) Biomedical Science**

Semester : I

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all. Question No. **1** is compulsory.
3. Subparts of the questions should be attempted together.
4. Give illustrations and examples wherever required.

1. (a) Briefly explain the following **(any six)** : (6×1.5=9)

(i) MTOC

(ii) RBC ghost

(iii) Prokaiyotic genome

(iv) ABC transporter

(v) Autophagy

(vi) Glycocalyx

(vii) I-cell disease

(viii) Lamins

(b) Differentiate between the following (**any three**): (3×3=9)

(i) Meiosis I and Meiosis II

(ii) Plant and Animal Cells

(iii) Dynein and Dynamin

(iv) Primary and Secondary Active Transport

2. (a) Discuss the membrane structure as proposed by Singer and Nicolson. How could you support this model by cell fusion experiments conducted by Frye and Edidin? (10)

(b) Compare and contrast the structure, functions and genome of mitochondria and chloroplast. (8)

3. (a) Cell-cell adhesion plays important roles in multicellular organisms. Discuss different types of anchoring junctions highlighting the type of adhesion proteins and cytoskeletal elements involved. (8)

(b) Discuss the role of NLS and NES in transport of proteins in and out of the nucleus? (6)

(c) What are lysosomes? Enumerate some of their functions. (4)

4. (a) Discuss facilitated diffusion with transport of glucose as an example. (8)

(b) Compare and contrast the structure and assembly of microtubules with that of microfilaments. (10)

5. (a) Elaborate the process of protein transport and synthesis in RER. (9)

(b) What is Progeria and how is it caused? (3)

(c) What is GPCR? How is it involved in cell signalling? (6)